

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

- 1 1. (Currently Amended) A method for optimizing response time of physical devices
2 in a data storage system comprising:
3 collecting statistics for each of the physical devices;
4 determining from the statistics a number n most active of the physical devices that
5 are the most active; and
6 for each of the n most active of the physical devices, adjusting a mirror service
7 policy associated with one or more mirrored logical volumes serviced by the physical
8 device to reduce seek time.
- 1 2. (Original) The method of claim 1, wherein the statistics include utilization and
2 wherein adjusting is performed if the utilization of the physical device is greater than a
3 threshold value.
- 1 3. (Original) The method of claim 1, wherein adjusting comprises:
2 using a cost function analysis to determine that workload assigned to the one or
3 more selected mirrored logical volumes according to a current mirror service policy can
4 be re-assigned to a corresponding mirrored copy according to a new mirror service
5 policy, the cost function analysis indicative of seek time and involving the selected
6 physical device and any physical device on which a mirrored copy resides.
- 1 4. (Original) The method of claim 3, wherein the physical devices involved in the
2 cost function analysis are physical mirrors.
- 1 5. (Original) The method of claim 3, wherein using comprises;
2 computing cost functions for each of the physical devices involved in the cost
3 function analysis and determining a maximum value from the computed cost functions,
4 based on the current mirror service policy and the new mirror service policy.

1 6. (Original) The method of claim 5, wherein using comprises:
 2 determining that the reassignment of workload can be made if the maximum value
 3 based on the new mirror service policy is less than the maximum value based on the
 4 current policy.

1 7. (Original) The method of claim 6, wherein adjusting comprises processing the
 2 one or more logical volumes in a sequence beginning with the outermost logical volume
 3 bordering logical volumes serviced by another physical device.

1 8. (Original) The method of claim 7, wherein, for each successive one of the
 2 processed logical volumes, the new mirror service policy of an immediate predecessor of
 3 the processed logical volumes is used as the current mirror service policy for the cost
 4 function analysis.

1 9. (Original) The method of claim 2, wherein the threshold value comprises fifty
 2 percent.

1 10. (Currently Amended) A computer program product residing on a computer
 2 readable medium for optimizing response time of physical devices in a data storage
 3 system, comprising instructions for causing a computer to:
 4 collect statistics for each of the physical devices;
 5 determine from the statistics a number n most active of the physical devices that
 6 are the most active; and
 7 for each of the n most active of the physical devices, adjust a mirror service policy
 8 associated with a mirrored logical volume services by the physical device to reduce seek
 9 time.

1 11. (Currently Amended) A data storage system comprising:
 2 physical devices having mirror logical volumes stored thereon;
 3 a storage controller for controlling access to the physical devices; and
 4 wherein the storage controller collects for the physical devices statistics including
 5 utilization, determines from the statistics a number n of the physical devices that are the

6 most active and, for each of the n ~~of the~~ most active of the physical devices, adjusts a
7 mirror service policy associated with a mirrored logical volume serviced by the physical
8 device to minimize seek time when the utilization is greater than a threshold value.

1 12. (Previously Presented) The computer program of claim 10 wherein the mirror
2 service policy is adjusted in response to simulation of a new mirror service policy.

1 13. (Currently Amended) The computer program of claim 12 wherein the mirror
2 service policy is adjusted in response to a cost function analysis of ~~the a~~ selected one of
3 the n most active physical devices as a result of a current mirror service policy and a cost
4 function analysis of the selected physical device as a result of the new mirror service
5 policy.

1 14. (Previously Presented) The computer program of claim 11 wherein the mirror
2 service policy is adjusted in response to simulation of a new mirror service policy.

1 15. (Currently Amended) The computer program of claim 14 wherein the mirror
2 service policy is adjusted in response to a cost function analysis of ~~the a~~ selected one of
3 the n most active physical devices as a result of a current mirror service policy and a cost
4 function analysis of the selected physical device as a result of the new mirror service
5 policy.

1 16. (New) The method of claim 1 further comprising sorting the n most active of the
2 physical devices by activity level and wherein the mirror service policy is adjusted for
3 each of the n most active of the physical devices in the sorted order.

1 17. (New) The computer program product of claim 10 further comprising instructions
2 for causing a computer to sort the n most active of the physical devices by activity level
3 and wherein the mirror service policy is adjusted for each of the n most active of the
4 physical devices in the sorted order.

- 1 18. (New) The data storage system of claim 11 wherein the storage controller sorts
- 2 the n most active of the physical devices by activity level and wherein the mirror service
- 3 policy is adjusted for each of the n most active of the physical devices in the sorted order.